

SIZING UP THE SITUATION

ORIGINATING TECHNOLOGY/ NASA CONTRIBUTION

Hailstorm damage to the Space Shuttle's External Tank inspired a NASA innovation with extensive photography applications. In order to measure the defects caused by the storm, Kennedy Space Center used telephoto lenses to zoom in on the tank and view the damage clearly. However, since there was no reference object in the image, the engineers could not determine the scale of the damage.

In photographic situations similar to this, an object, such as a ruler, is placed within the field of view. This allows a person to look at a photograph and have a visual indication of the scale of the objects in it. In the External Tank situation, however, this procedure was not possible.

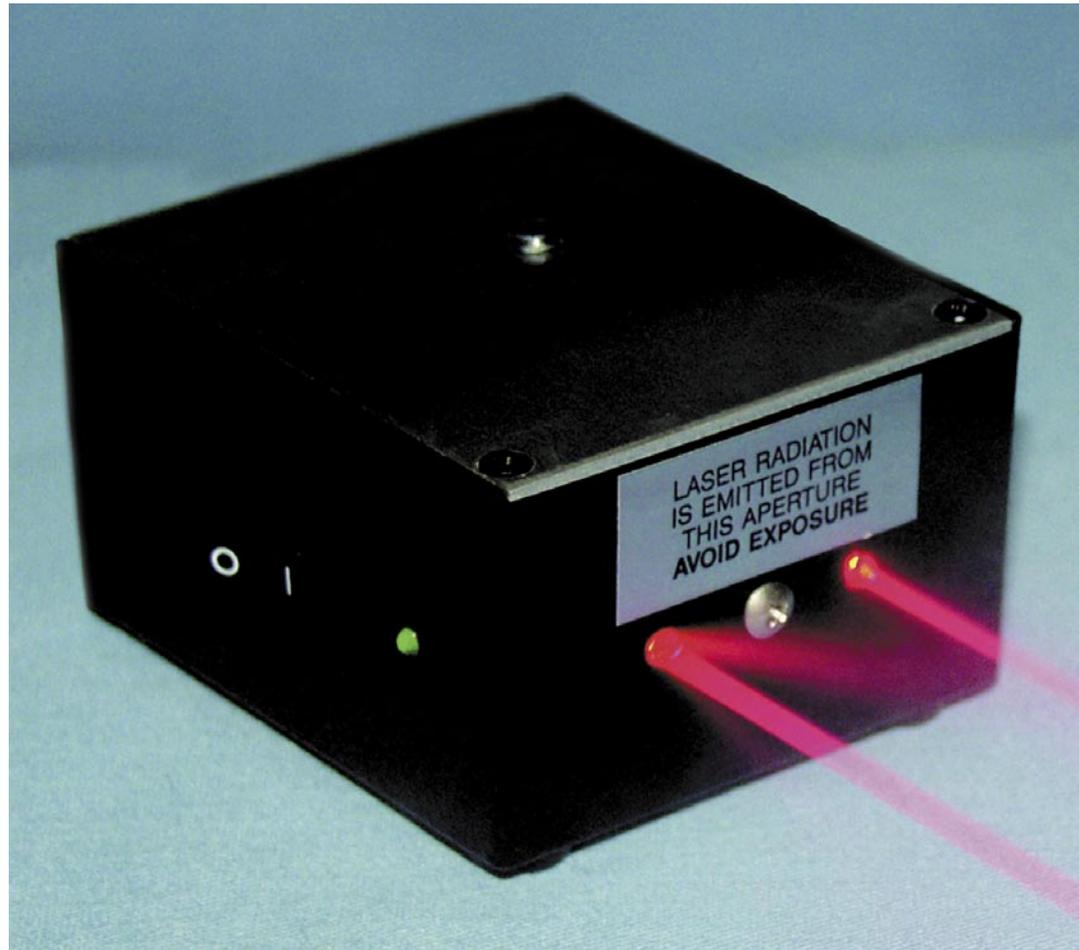
As a solution, Kennedy developed the Scaling and Measurement Device for Photographic Images, which provides a non-intrusive means of adding a scale to a photograph. In addition to meeting Kennedy's needs, scaling images is extremely important in crime and accident

scene investigations, oil and chemical tank monitoring, and aerial photography.

The innovation consists of a tool that attaches directly to a camera or charge coupled device using a standard screw. Two lasers fitted to the device provide parallel beams that are set 1 inch apart. These lasers enable the device to project a pattern into the field of view. When a photograph is taken, the image of the laser pattern appears, along with the

image of the object under investigation, allowing the viewer quantifiable information as to the size of the object. The laser beams are accurate to approximately 200 feet.

Windows®-based software was developed to work with the scaling device tool. The software provides further techniques to measure objects in photographs and digital images. By using the software, any object in the image can be measured diagonally, vertically, and



The Laser Scaling Device, developed at Kennedy Space Center, attaches directly to a camera and projects a pattern of dots into the field of view. The image of this pattern appears in the photograph along with the image of the object under investigation, enabling the viewer to measure the size of the object.

horizontally. The device and its software enable the user to determine two-dimensional measurements within a photograph.

PARTNERSHIP

[Armor Holdings](#), Inc., a leading manufacturer of crime scene investigation accessories, signed a non-exclusive license with Kennedy for the rights to both the scaling device and its accompanying software. Based in Jacksonville, Florida, Armor Holdings provides the forensics industry with tools needed to perform a job efficiently and safely.

PRODUCT OUTCOME

Armor Holdings' new Laser Scaling Device benefits crime scene investigators, photographers, and surveillance personnel. Information on the device is being distributed to crime laboratories around the world. Law enforcement photographers that take pictures of crime scenes can use the Laser Scaling Device to shoot scaled photos of blood-spatter patterns, graffiti, or other components of crime scenes that can be portrayed in a two-dimensional medium. In other applications, industrial photographers can use the device to shoot scaled photographs of large items that are not easily accessible by means of ladders or lifts.

The small tool weighs approximately half a pound and is powered with one replaceable nickel-cadmium battery. The device can be easily turned on and off to allow a photographer to provide the valuable scaling information within a picture. The software program included in the package allows the user to import the photograph, benchmark the two laser dots, and provide scale to the photograph. The user can then apply a measuring component in the program to determine the distances or size of items within the photograph.

Windows® is a registered trademark of Microsoft Corporation.

NASA TECHNOLOGY USED IN

Scaling Device for Photographic Images

CRIME SCENE ANALYSIS

ARMOR HOLDINGS, INC.
LIGHTNING
POWDER COMPANY, INC.
 An Armor Holdings Company

By enabling users to measure the size of an object in a photograph, the Laser Scaling Device helps crime scene investigators analyze information.